

***Remarks***

Reconsideration of this Application is respectfully requested.

Claims 1-24 are pending in the application, with claims 1, 8, 13, and 20 being the independent claims. No new matter has been added.

Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and that they be withdrawn.

***Response to Comments in the Advisory Action***

The Examiner has maintained the rejection of claims 1-24 under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 6,901,049 to Chapman (“Chapman”) in view of U.S. Patent No. 6,032,197 to Birdwell *et al.* (“Birdwell”), and in further view of U.S. Patent No. 6,300,887 to Le (“Le”). In the previous Reply, filed April 7, 2008, Applicants traversed these rejections on the basis that Chapman, Birdwell and Le, alone or in combination, do not teach or suggest determining whether a CMTS supports a dynamic delta encoding header suppression protocol, as recited by independent claims 1 and 13. In the previous Reply, Applicants traversed these rejections as well because Chapman, Birdwell and Le, alone or in combination, do not teach or suggest receiving a message from a cable modem indicating support for a dynamic delta encoding header suppression protocol, as recited by independent claims 8 and 20.

In the Advisory Action, dated April 21, 2008, the Examiner states that Applicants’ arguments with respect to Chapman, Birdwell and Le are not persuasive because “the claims and specification show no clear distinction for the claim language of

‘dynamic delta encoding header suppression protocol’ from Chapman’s header suppressing protocol” and “the specification did not once use the term ‘dynamic delta encoding header suppression protocol’”. *See* Advisory Action, page 2. For the reasons set forth below, Applicants respectfully traverse.

The specification of the present application clearly and distinctly describes a dynamic delta encoding protocol for header suppression (i.e., a dynamic delta encoding header suppression protocol). In fact, the specification of the present application includes an **entire** section delineated by the title “Dynamic Delta Encoding Scheme.” *See* present specification, paragraph [0185]. Dynamic delta encoding is described as a technique for reducing the bandwidth required to send changing fields of a header. *See* present specification, paragraph [0186]. As described in the present specification, fields that change in a predictable manner “are not transmitted in their entirety.” *Id.* Rather, the dynamic delta encoding protocol advantageously allows transmission of “a smaller delta-encoded value...that represents each field’s change in value from one packet to the next.” *Id.*

In complete contrast, Chapman only describes the use of a **single** suppression technique **for use within a DOCSIS network**; namely DOCSIS Header Suppression. *See* Chapman col. 6, ll. 19-24. Chapman explicitly states that this technique (i.e., DOCSIS Header Suppression) “is different than Compressed RTP (CRTP),” which “only sends changes associated with the IP/UDP/RTP header.” *See* Chapman, col. 6, ll. 25-27. Applicants submit that the suppression protocol of Chapman, consequently, **cannot** possibly be considered equivalent, or even comparable to dynamic delta encoding, as recited by claims 1, 8, 13 and 20 of the present specification, since dynamic delta

encoding similarly transmits “each field’s change in value from one packet to the next.”  
*See* present specification, paragraph [0186].

Furthermore, as mentioned in the previous reply, dated April 17, 2008 (reproduced below), Chapman does **not** provide a mechanism for using alternative header suppression techniques, such as dynamic delta encoding, **within a DOCSIS network** because the use of such techniques would raise undesired interoperability issues. Therefore, persons skilled in the art would not be motivated to combine the teachings of Chapman with Birdwell and Le in order to cure the above noted deficiencies of Chapman (i.e., Chapman does not teach or suggest dynamic delta encoding), nor could they absent such a teaching that provides the ability to incorporate proprietary data transfer protocols, such as dynamic delta encoding, within a DOCSIS network.

Based on the foregoing arguments, and the arguments presented below, Applicants respectfully request that the rejection of claims 1-24 based on the cited art be reconsidered and withdrawn.

***Rejections under 35 U.S.C. § 103***

The Examiner has rejected claims 1-24 under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 6,901,049 to Chapman (“Chapman”) in view of U.S. Patent No. 6,032,197 to Birdwell *et al.* (“Birdwell”), and in further view of U.S. Patent No. 6,300,887 to Le (“Le”). For the reasons set forth below, Applicants respectfully traverse.

Claim 1 is directed to a method for optimizing the transmission of TCP/IP traffic between a cable modem and a cable modem termination system (CMTS) in a DOCSIS network. The method includes the steps of:

- (a) determining whether the CMTS supports a dynamic delta encoding header suppression protocol; and
- (b) responsive to a determination that the CMTS does support the dynamic delta encoding header suppression protocol, performing operations including
  - (i) transmitting fields in a first protocol header of a first TCP protocol packet from the cable modem,
  - (ii) suppressing a redundant field in a second protocol header of a subsequent TCP protocol packet, and
  - (iii) transmitting a delta-encoded value for each non-redundant field in said second protocol header of said subsequent TCP protocol packet, wherein said delta-encoded value represents a change in value from a respective non-redundant field in said first protocol header of said first TCP protocol packet.

Chapman does not teach or suggest each of the foregoing features of claim 1. For example, Chapman does not teach or suggest “determining whether the CMTS supports a dynamic delta encoding header suppression protocol,” as recited in claim 1. Chapman teaches the use of a single header suppression technique: suppression of Ethernet, UDP and IP headers in a flow of RTP packets corresponding to a Voice over Internet Protocol (VoIP) phone call. *See* Chapman, col. 4, ll. 35-50. Specifically, Chapman describes the use of “DOCSIS Header Suppression,” which suppresses fields that remain constant within a header. *See* Chapman, col. 6, ll. 19-24. As such, Chapman does not teach “determining whether the CMTS supports a **dynamic delta encoding header suppression protocol**,” since Chapman only suppresses packets using the **single** form of DOCSIS Header Suppression.

Birdwell does not provide this missing teaching. Birdwell may disclose techniques for implementing packet header compression. *See* Birdwell, col. 2, ll. 4-9. However, Birdwell is silent as to how such techniques could be implemented in a DOCSIS network<sup>1</sup> and, as such, also does not teach or suggest “determining whether the CMTS supports a dynamic delta encoding header suppression protocol,” as recited in claim 1.

In similar regards, Le does not provide this missing teaching. Le may disclose the use of delta encoding as a compression technique. *See* Le, col. 22, ll.29-34. However, Li is also silent as to how such a technique could be implemented in a DOCSIS network, and, as such, also does not teach or suggest “determining whether the CMTS supports a dynamic delta encoding header suppression protocol,” as recited in claim 1.

In summary, Applicants assert that the Examiner inappropriately combines Chapman with the teachings of Birdwell and Le. Persons skilled in the art would not be motivated to combine the teachings of Chapman with Birdwell and Le, since conventional DOCSIS technology as represented by Chapman does **not** provide a mechanism for using alternative header suppression techniques, such as dynamic delta encoding, because the use of such techniques would raise undesired interoperability issues. As set forth in the background section of the present specification:

Heretofore, the use of proprietary data transfer protocols that extend beyond those provided by the DOCSIS specification have been avoided. This is due, in part, to the fact that the DOCSIS specification does not

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<sup>1</sup> The MPEP instructs that preambles that limit structure must be given patentable weight. (*See* MPEP 2111.02(I)). The preamble feature of a CMTS implemented “in a DOCSIS network” defines a CMTS that has structure limited to **at least** function within a DOCSIS network. Thus, the preamble of claim 1 must be given patentable weight.

provide a mechanism for using alternative protocols in a cable modem system. For example, the DOCSIS specification does not provide a mechanism for the use of data packet formats other than those it provides. Moreover, because conventional CMTS and cable modem devices have been designed in accordance with the DOCSIS specification, the use of extended protocols has been avoided to ensure interoperability between individual cable modem system components. For example, conventional DOCSIS-compliant CMTS equipment is incapable of differentiating between standard DOCSIS traffic and traffic transmitted in accordance with an extended protocol.

*See* Specification at paragraph [0017]. Absent such a teaching that provides the ability to incorporate proprietary data transfer protocols, such as dynamic delta encoding, within a DOCSIS network, Applicants assert that the Examiner cannot properly reject independent claim 1.

For at least the reasons set forth above, Applicants assert that independent claim 1 is patentable over Chapman, Birdwell and Le alone or in any rational combination. Claims 2-7 are similarly patentable over the combination of Chapman, Birdwell and Le for at least the same reasons as claim 1, from which they depend, and further in view of their own respective features. Applicants respectfully request that the rejection of claims 1-7 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 8 is directed to a method for receiving packets by a cable modem termination system (CMTS) from a cable modem in a DOCSIS network that comprises the step of "receiving a message from the cable modem indicating support for a dynamic delta encoding header suppression protocol." For reasons parallel to those provided above in regard to claim 1, the combination of Chapman, Birdwell and Le does not teach or suggest this feature. Persons skilled in the art would not be motivated to combine the teachings of Chapman with Birdwell and Le, since conventional DOCSIS technology as represented by Chapman does **not** provide a mechanism for using

alternative header suppression techniques, such as dynamic delta encoding, because the use of such techniques would raise undesired interoperability issues. Therefore, independent claim 8 is patentable over the combination of Chapman, Birdwell and Le. Dependent claims 9-12 are similarly patentable over the combination of Chapman, Birdwell and Le for at least the same reasons as independent claim 8, from which they depend, and further in view of their own respective features. Accordingly, Applicants respectfully request that the rejection of claims 8-12 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 13 is directed to a computer program product comprising a computer useable medium including control logic for optimizing the transmission of TCP/IP traffic between a cable modem and a cable modem termination system (CMTS) in a DOCSIS network. The control logic comprises "first means for enabling a processor to determine whether the CMTS supports a dynamic delta encoding header suppression protocol." As noted above in regard to claim 1, the combination of Chapman, Birdwell and Le does not teach or suggest this feature. Therefore, independent claim 13 is patentable over the combination of Chapman, Birdwell and Le. Dependent claims 14-19 are similarly patentable over the combination of Chapman, Birdwell and Le for at least the same reasons as independent claim 13, from which they depend, and further in view of their own respective features. Accordingly, Applicants respectfully request that the rejection of claims 13-19 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.

Independent claim 20 is directed to a computer program product comprising a computer useable medium including control logic for enabling packets to be received by a cable modem termination system (CMTS) from a cable modem in a DOCSIS network.

The control logic comprises "first means for enabling a processor to receive a message from the cable modem indicating support for a dynamic delta encoding header suppression protocol." For reasons parallel to those provided above in regard to claim 1, the combination of Chapman, Birdwell and Le does not teach or suggest this feature. Persons skilled in the art would not be motivated to combine the teachings of Chapman with Birdwell and Le, since conventional DOCSIS technology as represented by Chapman does **not** provide a mechanism for using alternative header suppression techniques, such as dynamic delta encoding, because the use of such techniques would raise undesired interoperability issues. Therefore, independent claim 20 is patentable over the combination of Chapman, Birdwell and Le. Dependent claims 21-24 are similarly patentable over the combination of Chapman, Birdwell and Le for at least the same reasons as independent claim 21, from which they depend, and further in view of their own respective features. Accordingly, Applicants respectfully request that the rejection of claims 20-24 under 35 U.S.C. § 103(a) be reconsidered and withdrawn.



***Conclusion***

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment and Reply is respectfully requested.

Respectfully submitted,

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